

Frequently Asked Questions about the Reporting Water Quality Results for Chemical and Microbiological Analytes Data Standard

The questions and answers are arranged in three categories:

- General Questions
- Questions from Users of Data Standard
- Technical Questions from Implementers

General Questions:

Q1: What is the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes*?

A: A “data standard” is a documented agreement among organizations that share or exchange data regarding representation, formats, and definitions for such data. This list of data elements provides a common vocabulary to be used by the Environmental Protection Agency (EPA), States, Tribes, local government agencies and others for reporting water quality results for chemical and microbiological analytes.

Q2: Who developed the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes*-- is this another federal mandate?

A: No, this is not a federal mandate. The decision to develop Data Standards was made jointly by EPA, States and Tribes (through the Environmental Council of States [ECOS]). Together, they established the Environmental Data Standards Council (EDSC) to manage and guide the process.

The recommendation of the EDSC for this data standard is based on the work of the Advisory Committee on Water Information (ACWI). The Advisory Committee on Water Information adopted the list of *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes* in May 2001. This list was developed by the National Water Quality Monitoring Council (NWQMC) over a three year period.

The Advisory Council on Water Information (ACWI), a Federal Advisory Committee Act (FACA) organization, has as its members 35 representatives from local, State, Federal and private sector organizations and agencies to ensure coordination of water information programs. The National Water Quality Monitoring Council is one of its major committees assigned to coordinate and provide guidance and technical support for the voluntary implementation of the recommendations presented in the *Strategy for Improving Water Quality Monitoring in the United States* by government agencies and the private sector.

Q3: Why is the EDSC creating the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes*?

A: The EDSC has determined that water quality data could be more effectively shared if all entities conducting monitoring used the same “core set” of water quality data elements for reporting results. Because of the potential to share monitoring data across agencies, levels of governments and the private sector, the overall cost of monitoring has the potential to be reduced and the value of the monitoring information increased by this action.

Q4: What factors and criteria were used to develop the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes*?

A: The Council considered data elements used already in large national or regional databases, such as STORET, the Chesapeake Bay Information System, and data systems of other agencies. It also reviewed data elements in States’ databases. The criteria used were to identify data elements that answered the following essential questions:

- a. What was measured?
- b. At what concentration was it found?
- c. Where was the analyte found?
- d. When was the analyte found?
- e. What was the type of water source?
- f. Was there co-occurrence with other chemical, physical or microbiological parameters?
- g. Why was the sample collected and analyzed?
- h. What was the level of confidence in the reported results?
- i. Who conducted the monitoring?

Q5: What process was used in developing the Data Standard?

A: The National Water Quality Monitoring Council (NWQMC) set up a process to obtain a consensus for the scope and specificity of the water quality data elements. This process had both technical and public process components:

Technical Components. The NWQMC’s Methods and Data Comparability Board’s Data Elements Committee:

- (1) Reviewed other lists of data elements;
- (2) Considered data elements in use in other databases, such as STORET (Storage and Retrieval System), Chesapeake Bay Information System, Great Lakes Information System and Texas Natural Resources and Conservation Commission database;
- (3) Established criteria for the data elements; and
- (4) Organized a data model.

Public Process Components. Since consensus was an important consideration in establishing the Water Quality Data Elements (WQDE), the NWQMC provided several means to obtain input to its public processes:

- (1) The Data Elements Committee was set up to mirror the diverse representation of the NWQMC, including local, State, Federal and private sector organizations;
- (2) The committee held a workshop at the annual NWQMC monitoring

conference in April 2000 (Austin, TX) to obtain input on and confirmation of the approach and proposed data elements;

(3) NWQMC published the proposed WQDE in the Federal Register in April 2001 for public comment; and

4) NWQMC held four public meetings (Chicago, Denver, San Francisco and Washington, DC) on the proposed WQDE during April and May 2001.

Q6: Was the Standard developed for a specific database application?

A: No. The Standard was developed independent of any particular database and should be flexible to allow users to meet their needs and still enable sharing.

Questions from Users of the Data Standard:

Q7: Will my agency (or my program) be required to use the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes*?

A: No. State, Tribal, local government agencies, or programs are not required to adopt or use the standard, nor to incorporate it into that agency's or program's own data systems. However, once EPA and state agencies adopt and begin implementing the Data Standard, it will likely become the specified standard to facilitate exchanging environmental information among environmental agencies.

Q8: When is the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes* supposed to be approved by the Tribes, States, and EPA?

A: The EDSC is expected to review and approve this standard after a 45-day comment period beginning on the day of the issuance of a Federal Register Notice.

Q9: What are the potential benefits to users of the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes*?

A: The EDSC believes that the water quality data standard will (1) improve the consistency of water quality reporting, (2) maximize the use of resources allocated for water monitoring, and (3) increase the sharing of water quality data among organizations and governments, and thereby facilitate improved understanding of the conditions of the water environment and trends in its quality. Because environmental programs have adopted their own required data elements without considering the needs of other programs, the usefulness of the data for other purposes across levels of government and the private sector is constrained. The need for water quality monitoring information exceeds the capacity of any single agency to provide it. This set of data elements is an attempt to promote both universal definitions of the elements and to promote a common understanding of the extent of information needed to ensure the continued utility of water quality data.

Q10: I am a Tribal, State, or local government agency. My program doesn't use the same data elements as are indicated in proposed *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes*. Is there an expectation that we will change our data elements?

A: No. The Data Standard uses terminology intended for data exchange and is applicable only after the data you send crosses the threshold of your organization. Data that is exchanged will need to relate to existing data holdings or conform in definition, meaning, and format to the Standard.

Q11: My EPA program doesn't use the data elements indicated in the Standard. Is there an expectation that we will change our own data elements?

A: Although the Data standard is intended for use in data exchange, it is expected that EPA programs will, as necessary (and over time), modify the data elements that they currently collect to conform with the data elements in the Standard. The schedule for these changes is normally three years, with possible waivers in consideration of modernization and update schedules.

Q12: Can a user of the Data Standard report more data than is provided for in the Data Standard ?

A: Yes. The Data Standard was developed to be an "essential core set" of data elements for reporting results for chemical and microbiological analytes. Project specific needs may often indicate that additional data are needed based on the project's objectives.

Technical Questions from Implementers

Q13: Is the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes* the basis for a new data system design?

A: The answer for Federal, Tribal, State, and local government agencies is No. The *Data Standard for Reporting Water Results for Chemical and Microbiological Analytes* is more like a dictionary to help translate or exchange data from any one data system to another. The adoption of the Standard does not require that any non-EPA agency or program to change its current data system. When data is exchanged from one system to another, the Standard will provide the necessary information to ensure that data from a given field in the sending system is "mapped" to the correct location in the receiving system.

Q14: Will we have to change our existing data system to conform to the Data Standard?

A: Local system designers may, once they choose to use this Data Standard for data exchange, elect to modify their system (perhaps in the context of a previously planned system modernization) in order to create the capability of exchanging data that conforms with the Data Standard. EPA will be using the Data Standard as its own data systems are modified and updated.

Q15: We are planning to update our current data system. How can the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes* be of help in that effort?

A: The *Data Standard for Reporting Water Results for Chemical and Microbiological Analytes* will provide clear, concise, and well defined data elements for the reporting of chemical and microbiological analytes.

Q16: Are there any federal funds available to help States, Tribes, or local government agencies that implement federal programs if they choose to update their systems to enable them to communicate more easily using the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes*?

A: Yes, although such funding is not linked directly to the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes* development effort. EPA has and will continue to provide grant funding to assist other levels of government that implement federal environmental programs. Such assistance has often been used by grantees to help develop and update data management systems.

Q17: What does this standard have to do with the National Environmental Information Exchange Network I keep hearing about? And I thought everything was supposed to be in eXtensible Markup Language (XML)-- is this XML?

A: The Network concept relies upon common Data Exchange Templates (DETs) expressed in XML, and exchanged based on common protocols. This Data Standard would be used as the starting point or “core” for related DETs. Once established and approved, these flows would replace existing feeds to EPA’s national data systems. For example, several states have used a DET based on the State/EPA Facility Identification Standard to exchange facility data with EPA and other States, using Network protocols. The XML expression of this Data Standard is under development.

Q18: How are the data elements organized?

A: The Data Standard is organized based on the following data model:

1. Contacts
2. Result
3. Reason for Sampling
4. Date/Time
5. Location
6. Sample Collection
7. Sample Analysis

Q19: Should state or local data management systems be reconfigured just to reorganize or rename data elements to coincide with the data standard list?

A: This may become convenient, but is not necessary. The data elements in the list identify alternate names for many of the data elements. EPA is aware of instances of where this list of data elements has been mapped to existing data systems.

Q20: Can the listing be modified to support the following types of routine daily applications:

-A BOD time series from a single sample?

-Thousands of pieces of data from a single deployment of a continuous monitoring field instrument?

A: The list would not need to be modified. The use of the list in any particular application can accommodate such reporting, specifically by reporting the different monitoring result values at different times. The EPA Data Standard has data elements for “date” and “time.”

Q21: Can EPA and State field methods be summarized briefly in metadata? These methods include many of the data elements and could this reduce repetitious reporting?

A: Yes. Comment fields and open text fields allow for this.

Q22: Is the data standard consistent with STORET?

A: Yes, but STORET requires that certain information be supplied ahead of other information through a registration process. EPA is developing an XML template to map the data elements in the standard to STORET.

Q23: Will the *Data Standard for Reporting Water Quality Results for Chemical and Microbiological Analytes* be open for revision in the future? How will the Standard be maintained?

A: Yes. The NWQMC which originated the list intends to review it periodically and has a procedure for amendments. The NWQMC is also developing a list of data to be collected when higher levels of biology are being monitored. It is expected that these elements will be amended to the initial list. The EDSC can also amend its data standards as needed.